

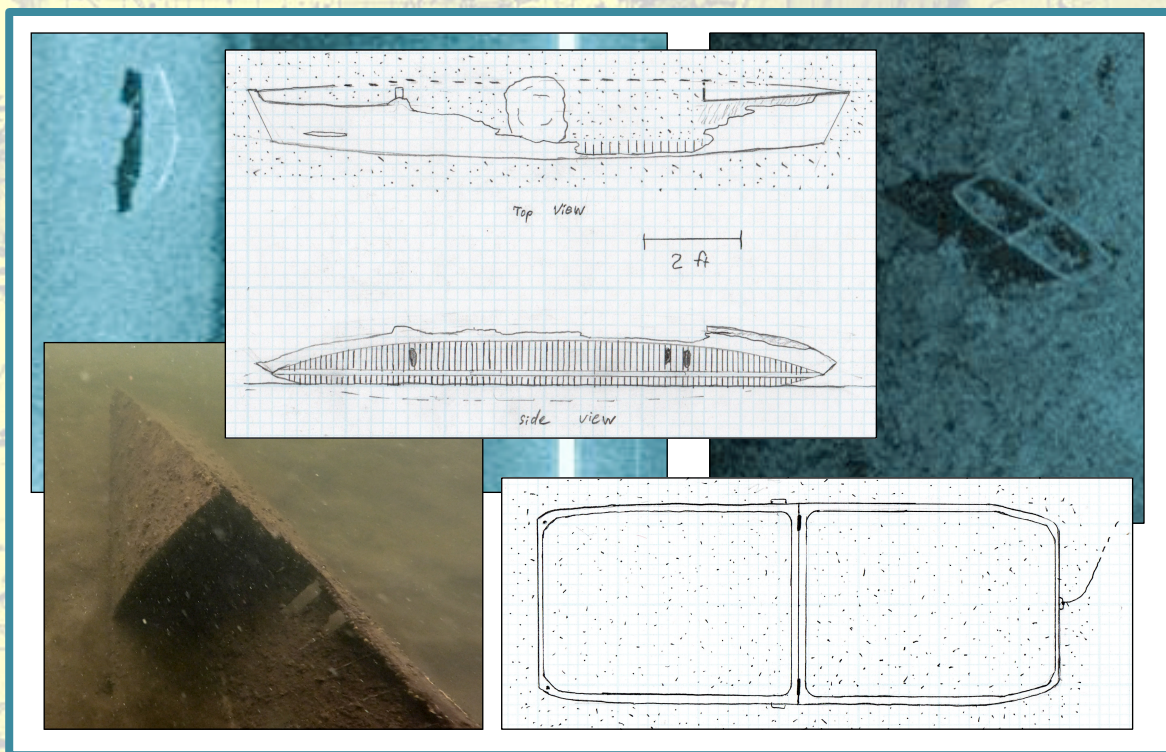


Ann Merriman  
Christopher Olson  
Minnesota Archaeological License 22-075



Minnesota Suburban Lakes Projects Series  
South and West Metro Lakes Underwater Archaeology Project

# Prior Lake Underwater Archaeology Project



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Ann Merriman, Christopher Olson, and Maritime Heritage Minnesota

## Acknowledgments

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### Maritime Heritage Minnesota



### Staff, Volunteers, Board of Trustees, and Mascots



*““...grants have allowed a small St. Paul-based nonprofit, Maritime Heritage Minnesota (MHM), to re-establish the discipline of underwater archaeology in Minnesota. Without this support, MHM could not have conducted its groundbreaking nautical archeological and maritime historical research.”*

*~Steve Elliott, Former Minnesota Historical Society CEO and Director, January 2015*

## **Introduction**

Wrecks and the artifacts associated with them tell a story. Removing or otherwise disturbing artifacts, treating them as commodities that can be sold, obliterates that story. Nautical archaeological and maritime sites are finite, and are significant submerged cultural resources. Nautical, maritime, underwater, maritime terrestrial – Maritime Heritage Minnesota's (MHM) deals with all of these types of sites throughout the State of Minnesota. MHM's Mission is to document, conserve, preserve, and when necessary, excavate these finite cultural resources where the welfare of the artifact is paramount. MHM is concerned with protecting our underwater and maritime sites – our shared Maritime History – for their own benefit in order for all Minnesotans to gain the knowledge that can be obtained through their study. MHM's study of wrecks does not include the removal of artifacts or damaging the sites in any way. MHM does not raise wrecks or 'hunt' for 'treasure'. Submerged archaeological sites in Minnesota are subject to the same State statutes as terrestrial sites: the Minnesota Field Archaeology Act (1963), Minnesota Historic Sites Act (1965), the Minnesota Historic District Act (1971), and the Minnesota Private Cemeteries Act (1976) if human remains are associated with a submerged site. Further, the case of *State v. Bollenbach* (1954) and the Federal Abandoned Shipwrecks Act of 1987 provide additional jurisdictional considerations when determining State oversight and "ownership" of resources defined by law as archaeological sites (Marken, Ollendorf, Nunnally, and Anfinson 1997, 3-4). Therefore, just like terrestrial archaeologists working for the State or with contract firms, underwater archaeologists are required to have the necessary education, appropriate credentials, and hold valid licenses from the Office of the State Archaeologist (OSA).

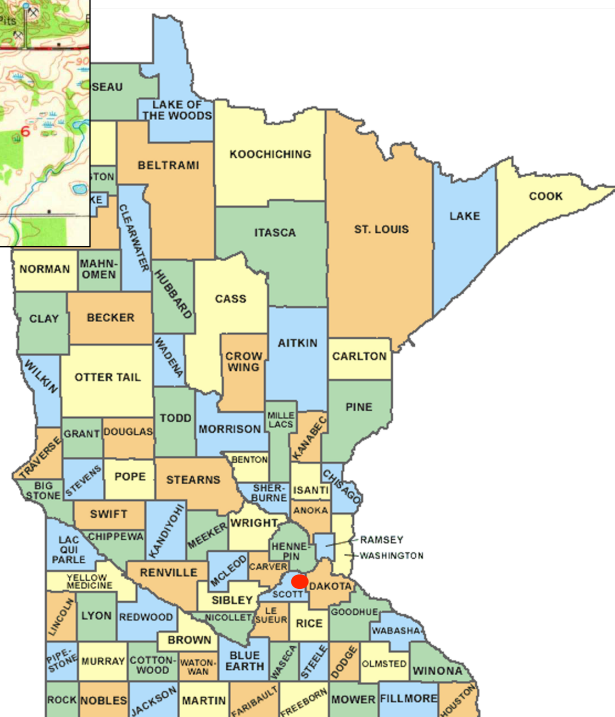
## **Research Design and Methodology**

This project is a significant step toward the comprehensive identification, documentation, preservation, and conservation of submerged cultural resources in Minnesota. The Prior Lake Underwater Archaeology Project (PLUA) in Scott County is part of the Southern and West Metro Lakes Underwater Archaeology Project (SWMLUA) that falls under the umbrella program, the Minnesota Suburban Lakes Survey Projects (MSLS). Lake Minnewashta and Lotus Lake in Carver County and Dakota County's Crystal Lake were also investigated during the SWMLUA Project. The purpose of the PLUA Project as part of the SWMLUA Project is to increase the collective maritime archaeological and historical knowledge of Minnesotans through the analysis of anomalies recorded on the bottoms of our state's suburban lakes during side and down-imaging sonar surveys. The PLUA Project is a Phase 1 underwater archaeological diving reconnaissance survey designed to locate, identify, and rudimentarily document objects - wrecks and other sites - on the lake bottom.

Prior to the beginning of the SWMLUA Project, MHM located and identified watercraft wrecks on the bottom of smaller Minnesota suburban lakes including Christmas Lake, Medicine Lake, Lake Johanna, Forest Lake, and Prior Lake. MHM has also identified and documented wrecks in larger lakes including Lake Minnetonka, White Bear Lake, and Lake Waconia. MHM has recognized 102 anomalies on the lake bottom during remote sensing surveys of Prior Lake. During the 2022 fieldwork season, MHM and its volunteers dove on 9 anomalies in the lake, but only located 8 of them due to low visibility. MHM conducted the diving reconnaissance in Prior Lake during 3 days of fieldwork in early-mid July. MHM used its research boat, *Anomaly 51*, to pinpoint the dive locations using embedded GPS data collected during sonar recording review, and a weighted Diver Down Buoy was deployed at the proper coordinates. MHM's Underwater Archaeologists and Volunteers then descended to the lake bottom to locate and document the anomalies. Using data accumulated from the fieldwork as a starting point, MHM conducted research to place newly recognized nautical archaeological sites and anomalies into their historical contexts. Minnesota Archaeological Site Forms were filed with the Office of the State Archaeologist (OSA) when appropriate.



A map of Prior Lake  
(USGS 1957)



The red circle marks the location  
of Prior Lake in Scott County



## Results: Prior Lake Underwater Archaeological Reconnaissance

After the completion of the PLUA/SWMLUA Project fieldwork in Prior Lake in July 2022, there are now 10 identified wrecks, 13 maritime sites/objects, and 8 'other' objects on the lake bottom. Dozens of other anomalies have not been investigated yet and their sonar signatures indicate their documentation in the future may produce promising results. The anomalies were identified through underwater archaeological reconnaissance fieldwork using SCUBA, digital video, measured drawings, side and down-imaging sonar, and maritime historical research. Of the 10 identified wrecks in Prior Lake, 8 of them now have Minnesota Archaeological Site numbers. During the PLUA Project specifically, Anomalies 82 and 84 were identified as wrecks, Anomaly 1 is a maritime site, Anomalies 91, 99, 100, and 103 are 'other' objects, and Anomaly 98 is a natural object. Anomaly 88 (a rectangular or square object) and Anomaly 96 (a probable wreck) were not located due to visibility issues.

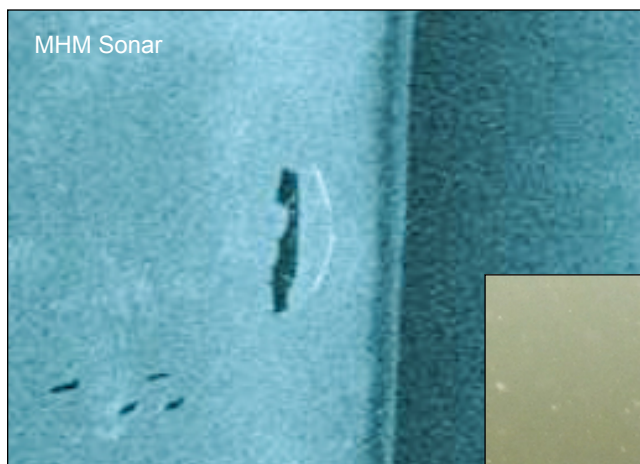
### Wooden Double-Ended Duck Boat Wreck, 21-SC-136 (Anomaly 84)

Anomaly 84 is 12.00 feet long and 2.60 feet in the beam; a narrow vessel. The wreck is lying on her port side, with silt inside the hull, covering the port inner strakes; a large stone is weighing down the port side. The bow and stern are both pointed, the wreck has a hard chine, and the flat bottom is athwartships planked. This combination of attributes - with the exception of the double-pointed ends - are indicative of the Fisherman's Friend small boat design. With the addition of 2 pointed ends, the craft becomes the Wooden Double-Ended Duck Boat Wreck. The sturdy stempost and sternpost survive, measuring 12.00 inches long each, an indication of the wreck's shallow depth of hold. The carvel-built hull (planks edge-to-edge) had between 4 and 7 hull strakes with caulking between them that originally comprised both the port and starboard hull. The sheer strake on the starboard side quarter is missing and the hull is damaged to the wreck's bottom amidships. At the starboard bow, a portion of the sheer strake is damaged, but the triangular foredeck is intact, held up by athwartships and longitudinal deck beams. The positioning and size of the foredeck is a diagnostic attribute for the duck boat designation; the hunter would use the deck as a solid base for firearms placement and shooting. One thwart, located aft of amidships, is no longer attached to the hull, but it is in roughly the correct position. Another possible thwart is lying in the hull, partially buried, on the port side forward. Because the wreck is lying on its port side, the outer bottom of the hull is about 70% exposed, with the athwartships planks with caulking between them clearly visible. Additionally, a keel plank is attached to the hull bottom at the centerline. The athwartships bottom hull planking and caulking are also clearly seen in exposed sections of the inner hull bottom. Slot-headed wood screws are exposed on the wreck's bottom and bits of white paint survive throughout the hull. MHM documented and 3D scanned what is believed to be the oldest plank-built watercraft in Minnesota, housed at the Minnesota Historical Society. This boat, constructed by Civil War casualty Charles Clark in 1857, was named *Constellation/Old Ironsides*.<sup>1</sup> Also a flat-bottomed narrow-beamed boat, the design of *Constellation/Old Ironsides* is the most similar to Anomaly 84 of all the wrecks and preserved watercraft

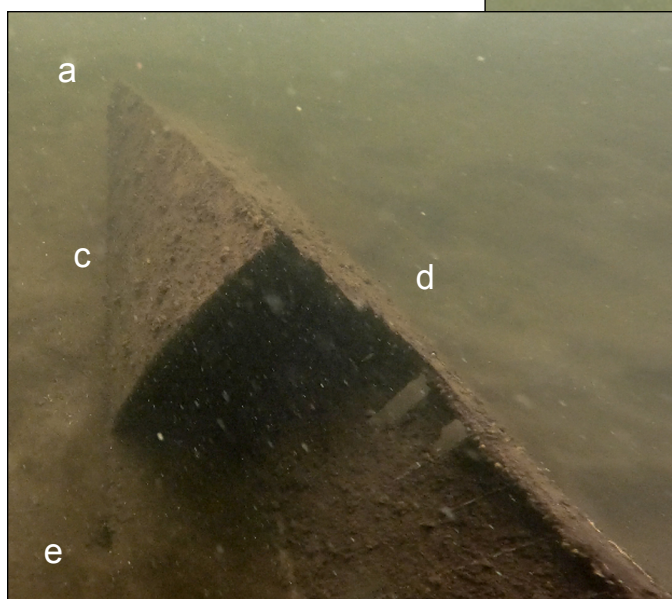
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<sup>1</sup>Merriman and Olson 2019, 3-11

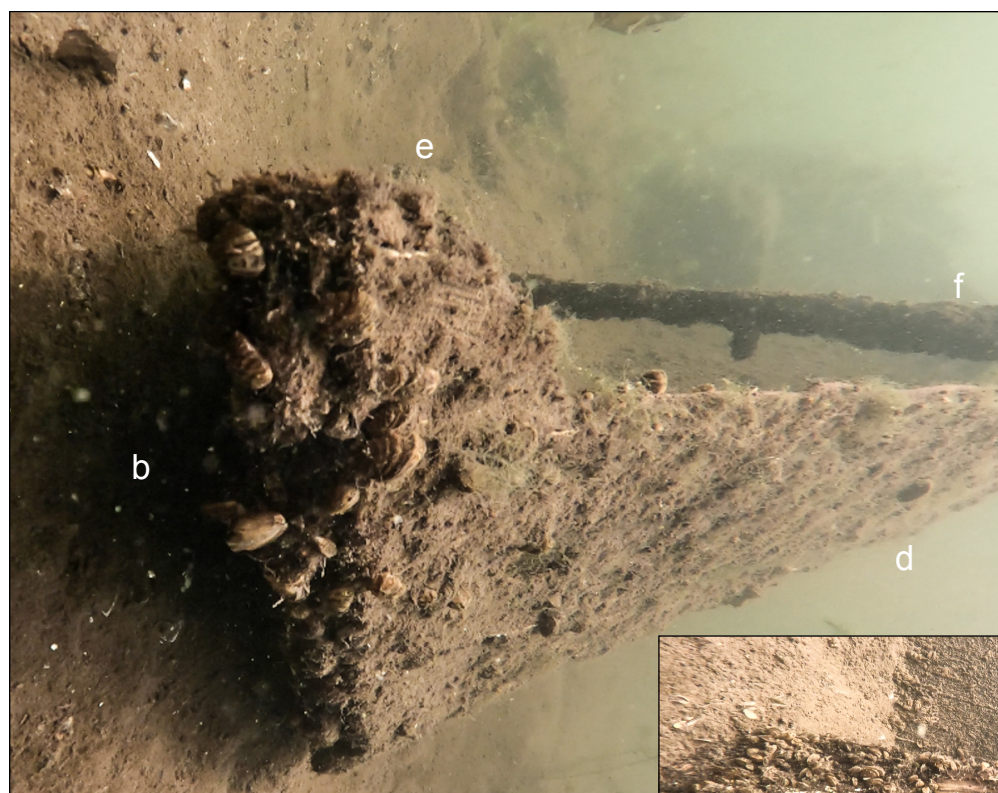
that MHM has discovered/documentated. MHM produced a rudimentary 3D model using photogrammetry (see below); further refinements are needed that additional video footage will provide. The Wooden Double-Ended Duck Boat Wreck was constructed around 1870, and since the average lifespan of a small wooden boat was not extremely long, a site disposition date of 1890 is reasonable. MHM submitted a Minnesota Archaeological Site Form to the OSA and Anomaly 84 received her site number - 21-SC-136 - at that time. 21-SC-136 is protected under the Federal Abandoned Shipwreck Act of 1987 and 1954 Minnesota State Law.



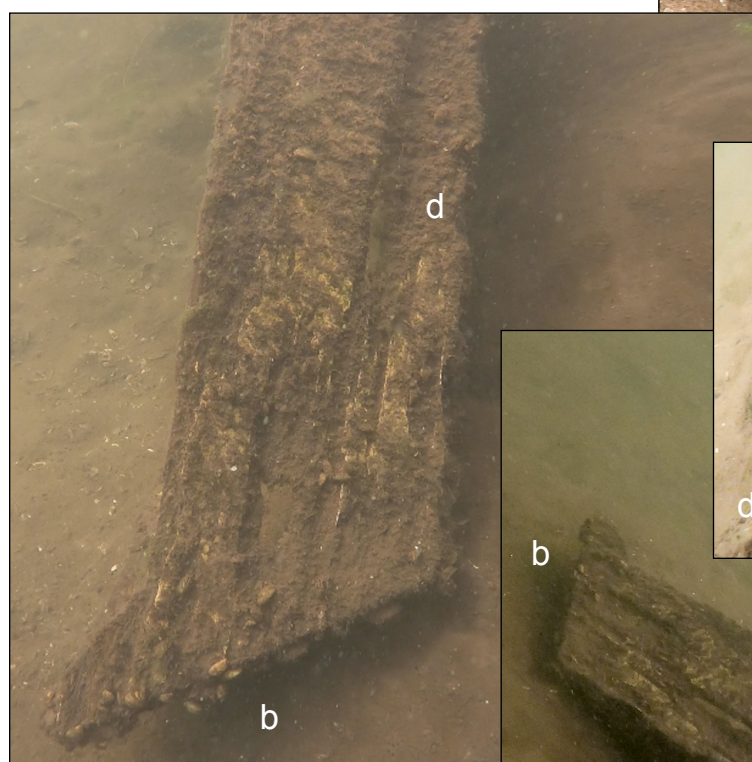
- a: Bow
- b: Stern
- c: Foredeck
- d: Starboard
- e: Port
- f: Thwart
- g: Sternpost



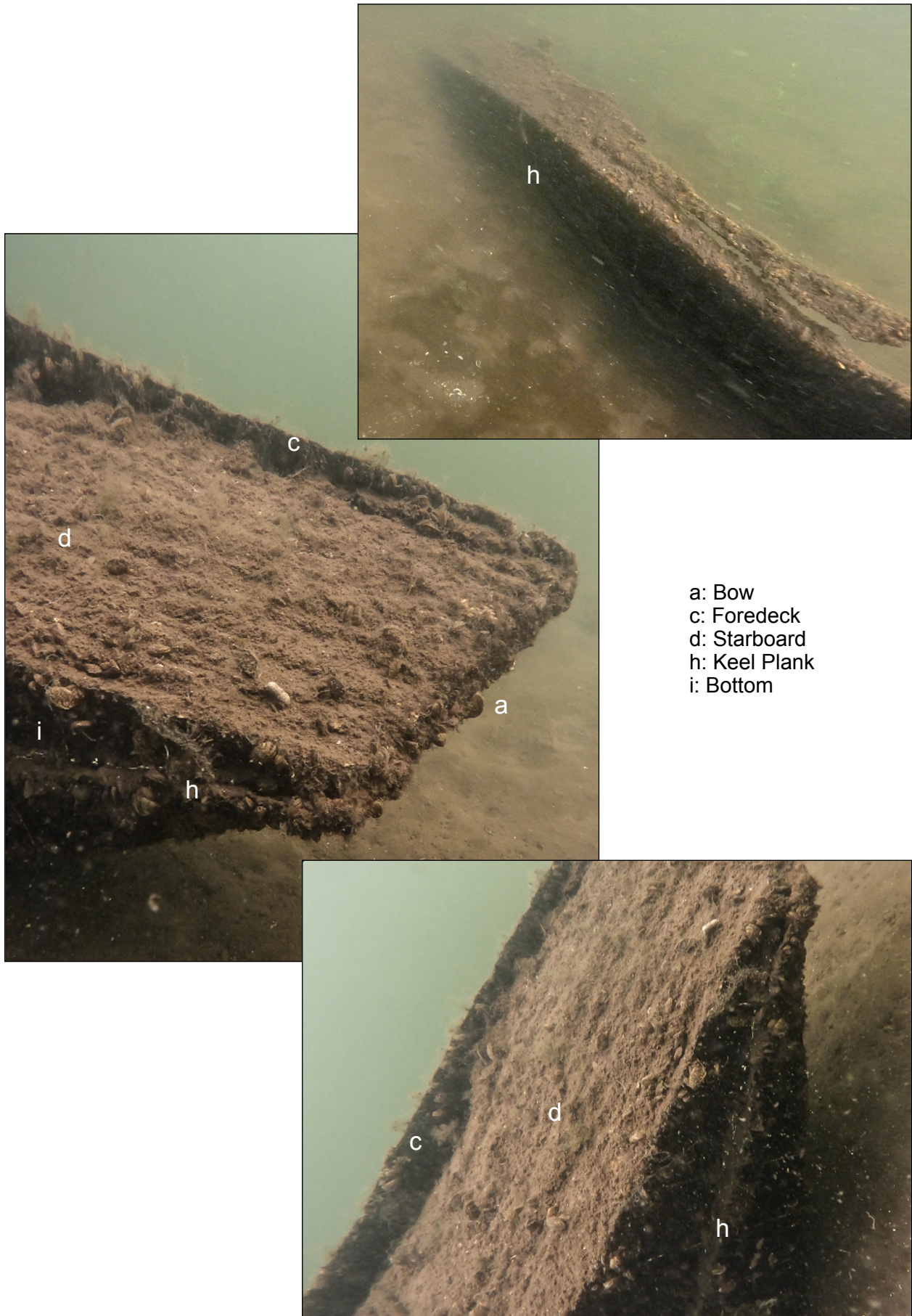




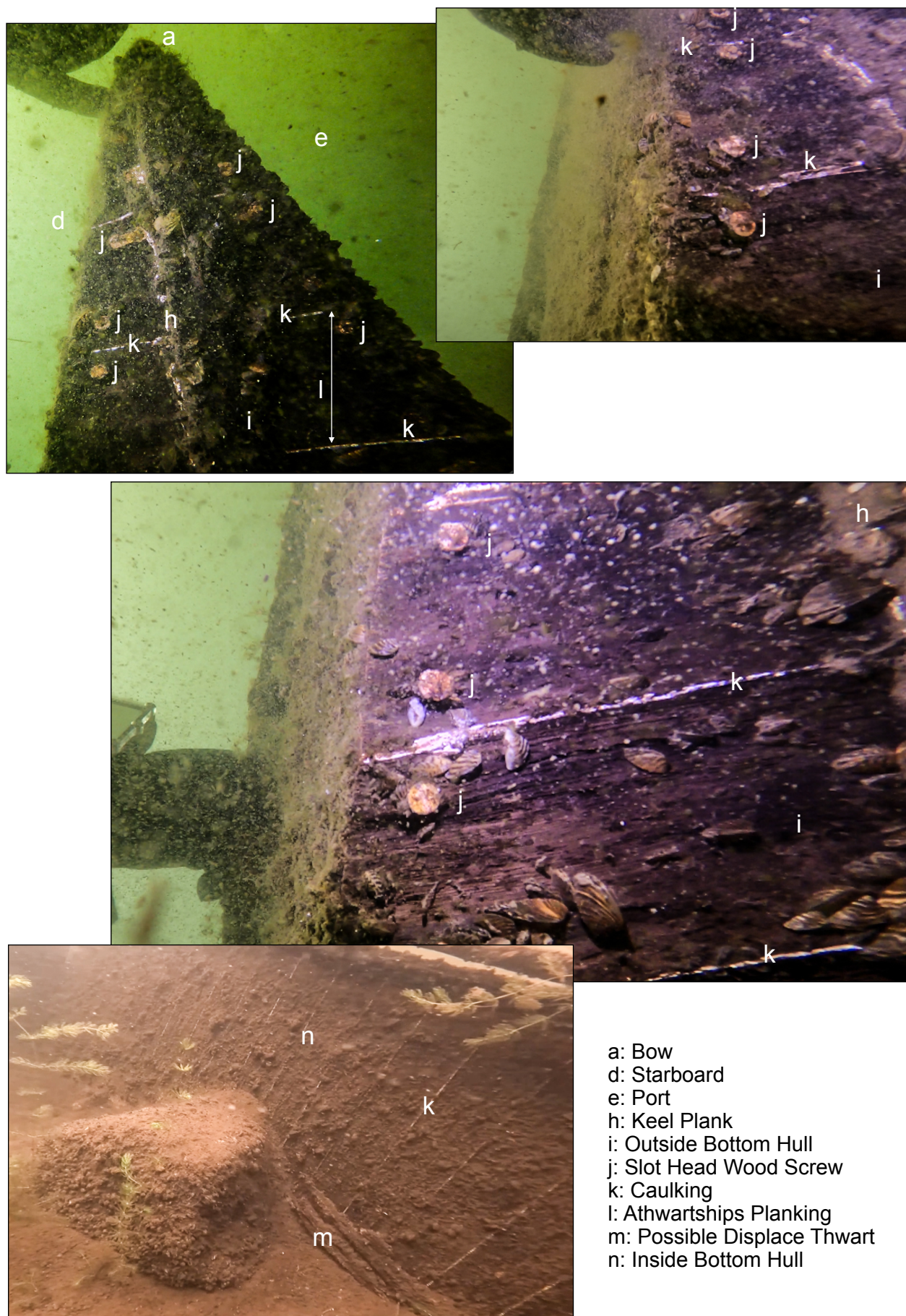
b: Stern  
d: Starboard  
e: Port  
f: Thwart  
g: Sternpost







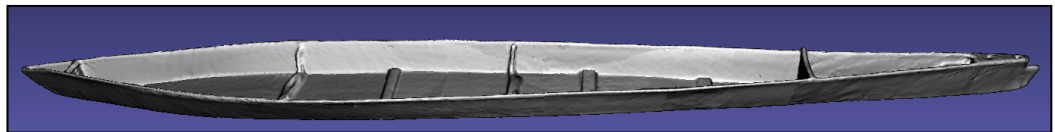
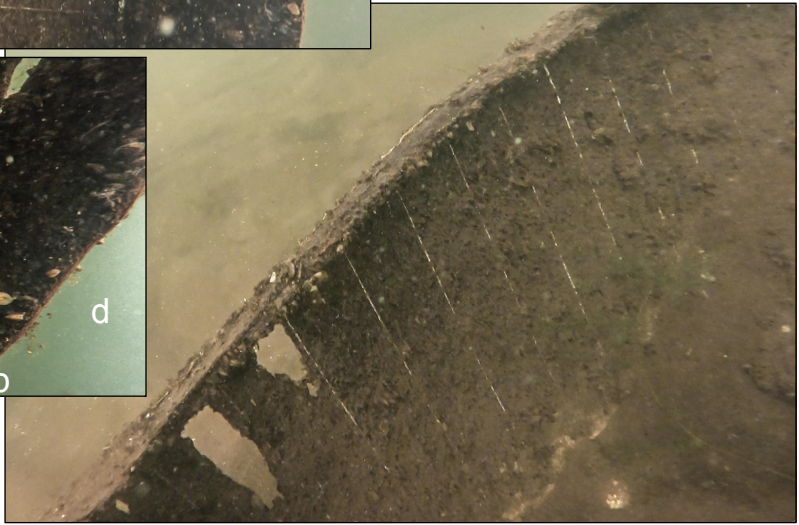
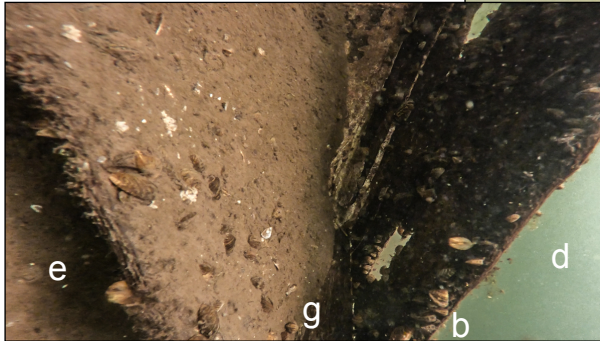






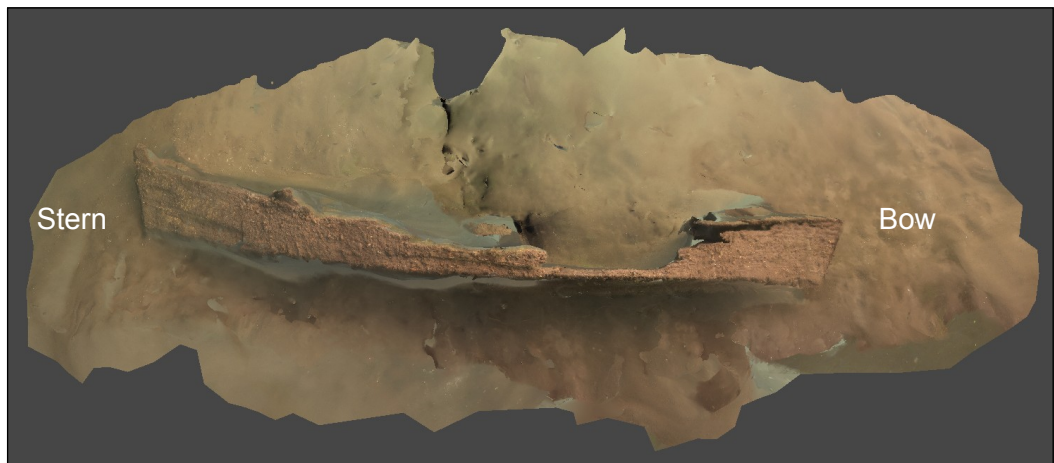


d: Starboard  
e: Port  
g: Sternpost  
m: Possible Displaced Thwart  
n: Inside Bottom Hull

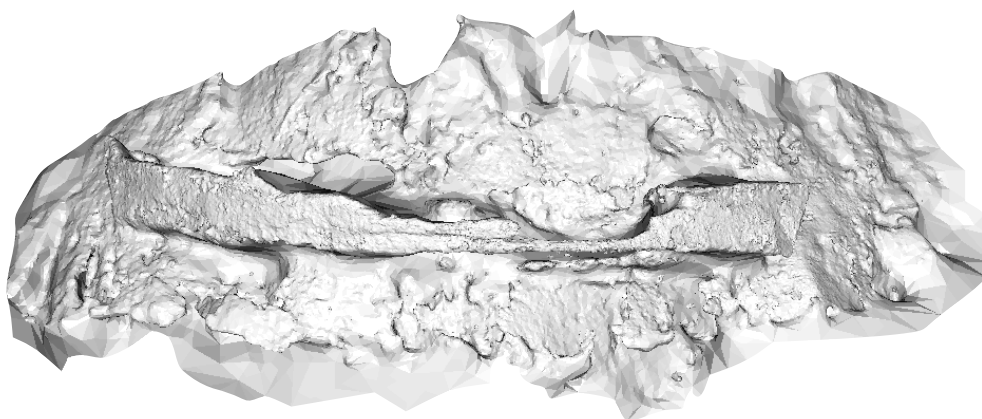


The *Constitution/Old Ironsides* constructed by Charles Ichabod Clark in 1857  
Photograph (left) and 3D model (above) (Merriman and Olson 2019, 9, 11)

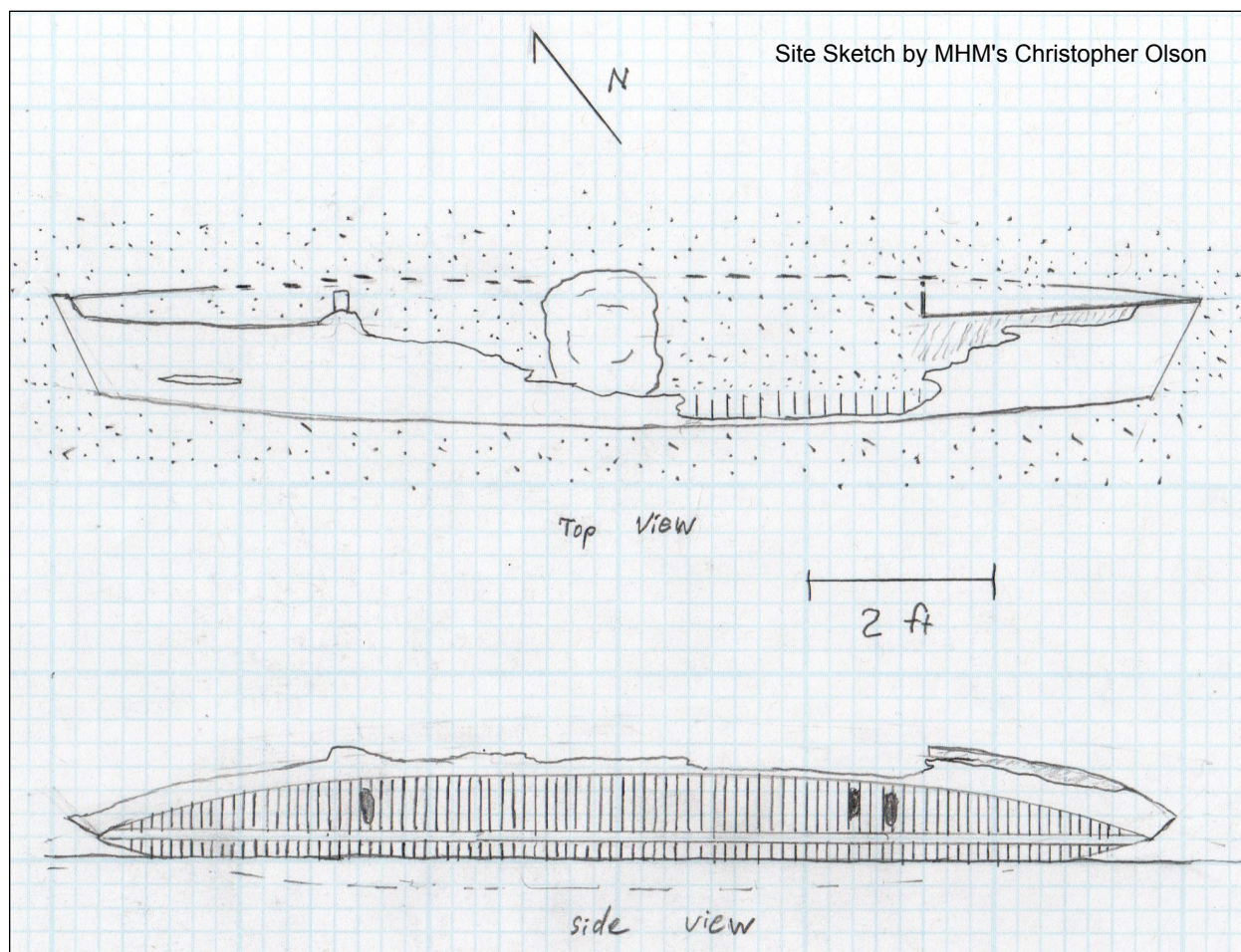
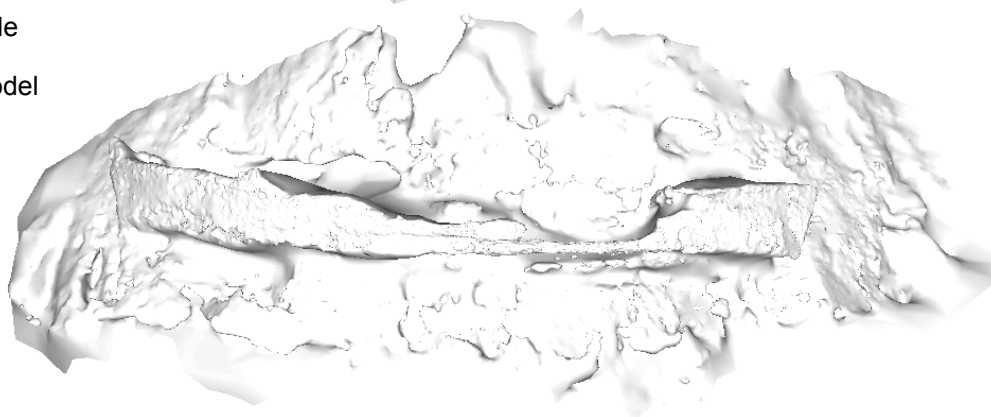
Rudimentary 3D model of the Double-Ended Duck Boat Wreck using photogrammetry





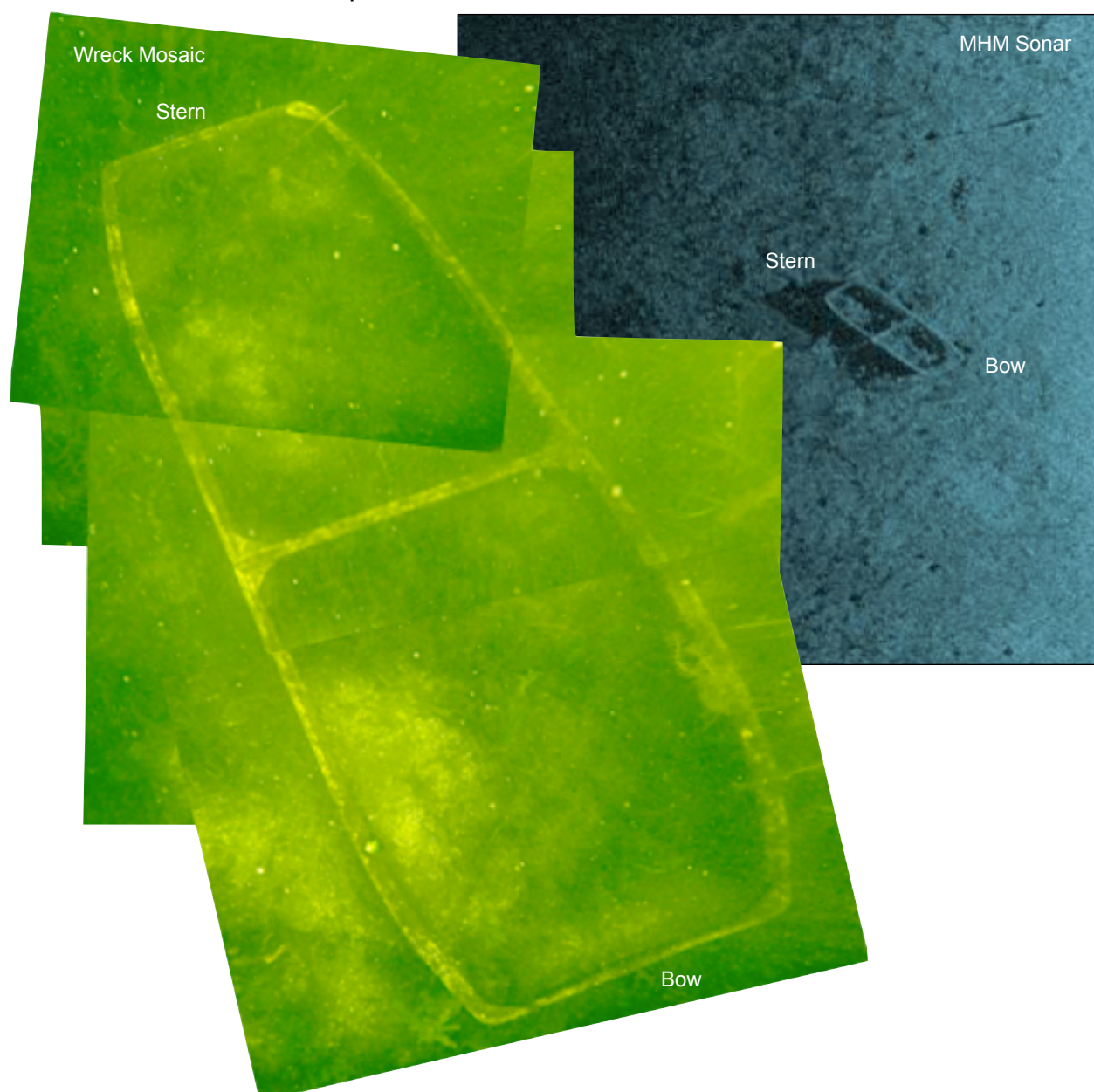


Different grayscale  
versions of the  
rudimentary 3D model  
of 21-SC-136

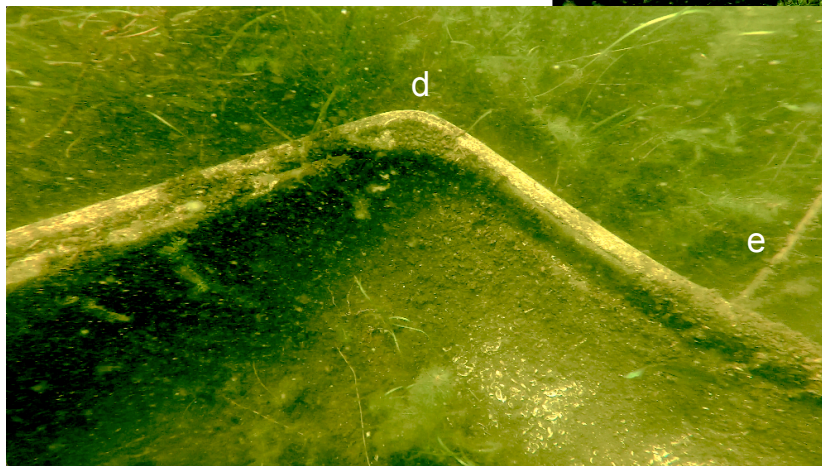
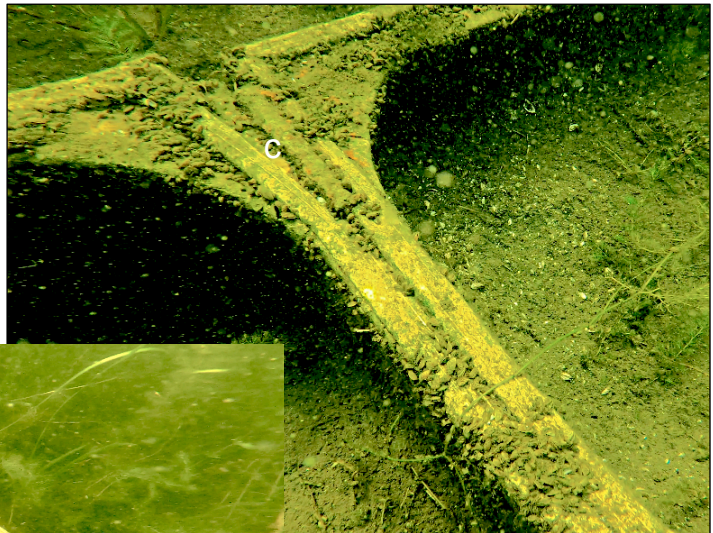


## Folding Fiberglass Jonboat Wreck, Anomaly 82

Anomaly 82 is 13.10 feet long, 5.10 feet in the beam, 3.80 at the bow, and 3.90 feet at the transom - a wide vessel - with a 1.70-foot depth of hold. The bow and stern are scow-shaped, and the bow is significantly raked, indicating she is a jonboat. The white hull is formed from fiberglass and the wreck has an extruded aluminum gunwale. At the port and stern quarters, gunwale-level triangular castings with holes in them add rigidity to the hull. Bow castings, smaller than the stern examples, are located at gunwale level on port and starboard, and a short line is attached to the bow. Anomaly 82 is comprised of 2 pieces connected amidships by 2 hinges, indicating she is a boat that folds. Some folding models have built-in permanent wheels and the vessels acts as its own trailer. MHM will return to this wreck to answer additional questions about her nature, including her construction date. No registration could be discerned and a sinking date cannot be determined at this time. Anomaly 82 is an underwater resource under the protection of the Federal Abandoned Shipwreck Act of 1987 and 1954 Minnesota State Law.<sup>1</sup>







- a: Amidships Hull Seam/Hinges
- b: Starboard Hinge
- c: Port Hinge
- d: Port Bow
- e: Bow Line
- f: Starboard Quarter
- g: Extruded Aluminum Gunwale



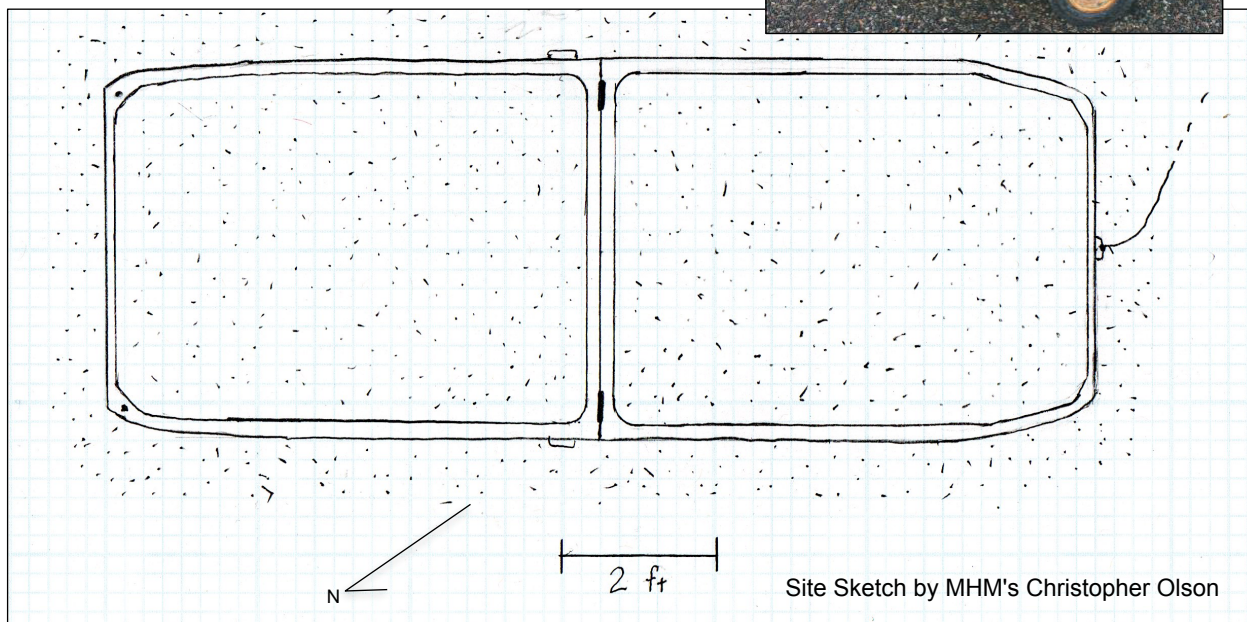


h: Starboard Handle  
i: Port Stern Triangular Casting



(Sheltowee Boat Company  
2015; The Samba 2004)

Examples of folding  
jonboats, aluminum (left)  
and fiberglass (below)



Site Sketch by MHM's Christopher Olson



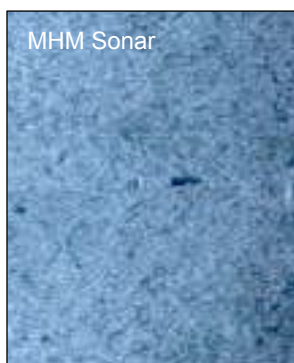
### Capsized Pontoon Raft, Anomaly 1

MHM has recorded sonar images of Anomaly 1 several times and has searched for the anomaly during times with bad visibility and overgrown weeds. MHM surmised the anomaly was a Capsized Pontoon Raft; it could have been a Capsized Pontoon Boat Wreck, but it was too small to be a boat. MHM located Anomaly 1 in 2022 - again during low visibility conditions - and determined it is a Capsized Pontoon Raft that measures 5.30 feet by 5.10 feet. No identifiable video was produced during the dive reconnaissance. Anomaly 1 is a Minnesota State protected underwater cultural resource.



### Small Steel Barrel, Anomaly 103

MHM located Anomaly 103 when searching for Anomaly 96 (see below). The Small Steel Barrel is 2.10 feet long and 1.30 feet in diameter, and mostly buried. Anomaly 103 is a Minnesota State protected underwater cultural resource.



### Lawn Chair, Anomaly 100

The Lawn Chair is barely recognizable, but it is comprised of an aluminum frame and strips of nylon with yellow, green, and white decorative stripes. The Lawn Chair is a Minnesota State protected underwater cultural resource.

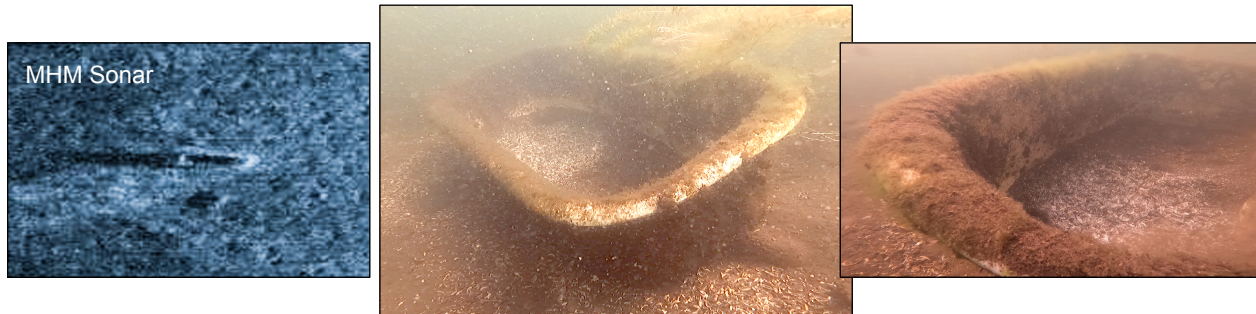


The seat webbing below is similar to the surviving nylon present on Anomaly 100, but it does not have the exact same decoration.



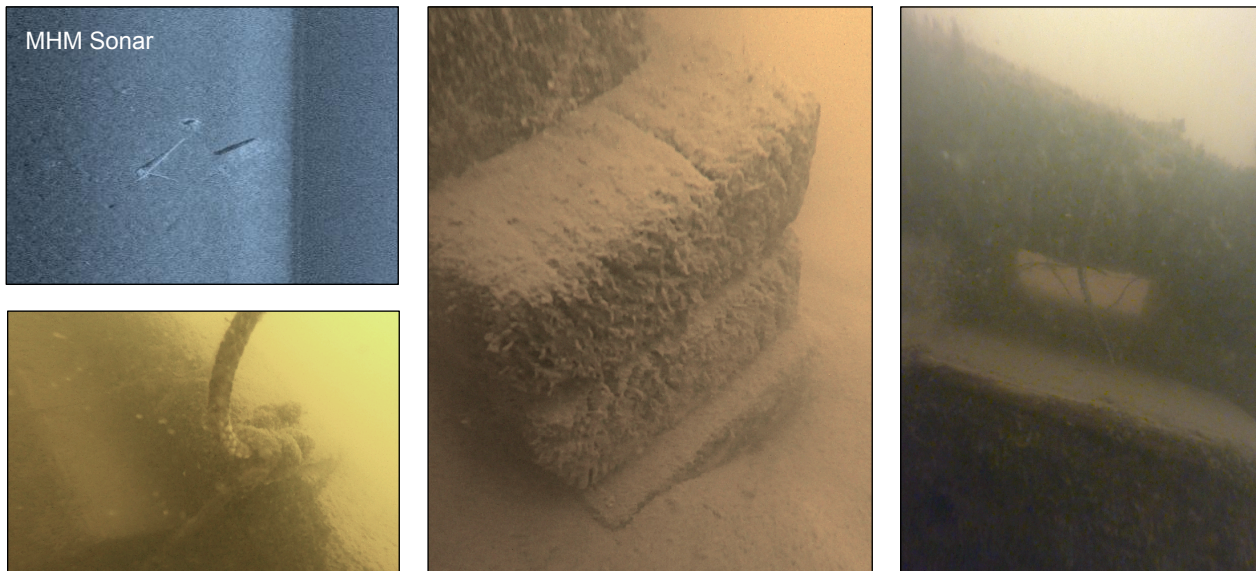
### Clawfoot Bathtub, Anomaly 99

Initially MHM surmised that Anomaly 99 was a very small wreck, but dive reconnaissance proved it to be a white Clawfoot Bathtub. While the feet cannot be seen, the design of the tub is highly suggestive of this type. Anomaly 99 is 5.20 feet long, 2.60 feet wide, and 1.90 feet deep. The tub is either iron or steel, and it is corroding. The Clawfoot Bathtub is a Minnesota State protected underwater cultural resource.



### Planks and Rope, Anomaly 91

Initially MHM surmised that Anomaly 91 was a broken-up sailboat wreck, but dive reconnaissance on the anomaly identified it to be several cut wooden planks tied together with rope. One of the blanks has a mortise cut out of it, suggesting these planks were lost during a construction job near or on the lakeshore. The planks are 6.00 feet long, and Anomaly 91 is a Minnesota State protected underwater cultural resource.

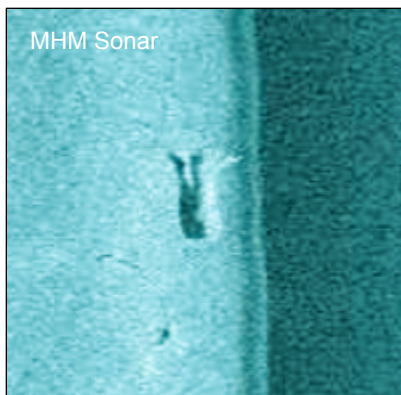


### Tree Stump, Anomaly 98

MHM initially identified Anomaly 98 as a large Tree Stump prior to conducting dive reconnaissance on the object. However, because the anomaly could be a cultural resource, MHM dove on it and confirmed Anomaly 98 is a long, rooted Tree Stump with

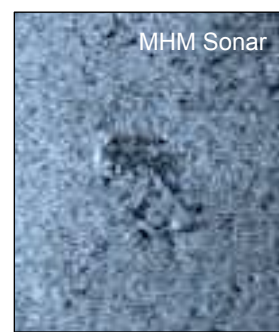


a rotted bottom. Anomaly 98 appears to have fallen into the lake after erosion loosened the soil around its roots; it was not cut.



### Probable Wreck, Not Located, Anomaly 96

MHM's underwater search for Anomaly 96 was not successful due to profuse vegetation in the area. MHM contends this anomaly is more than likely a wreck that is nearly buried, with only its gunwale exposed. Diving on Anomaly 96 will occur in the near future to determine if it is a wreck.



### Rectangle, Not Located, Anomaly 88

Anomaly 88 is clearly a rather large rectangle, probably constructed of wood. However, during the underwater search for the anomaly, it could not be located in near-zero visibility conditions. Additionally, the GPS coordinates of the anomaly are in question and additional sonar survey of the area is suggested.



## Conclusion

MHM identified wrecks 9 and 10 on the bottom of Prior Lake during the PLUA Project - the Wooden Double-Ended Duck Boat Wreck (21-SC-136) and the Folding Fiberglass Jonboat Wreck (Anomaly 82). These newly recognized wrecks offer significant and interesting data into the maritime history of the Prior Lake area in terms of both small unpowered purpose-built 19th Century wooden watercraft and quirky, easily transportable fiberglass boats used by southern metro Minnesotans. Significantly, the Wooden Double-Ended Duck Boat Wreck (21-SC-136) is the oldest plank-built wreck<sup>2</sup> identified and *in-situ* on the bottom of a Minnesota lake or river to date. These small

<sup>2</sup>Lake Minnetonka's Dakota Unfinished Dugout Canoe Wreck (21-HE-557) is the oldest *in situ* watercraft identified to date in Minnesota, fabricated from a basswood tree. The date range for this canoe - using a C14 test, stratigraphic artifact disposition, and relative dating - is 1683-1936, with the most probable range being 1802-1850 (Merriman and Olson 2022).

wooden boats used for recreation, food procurement, and local travel on our State's thousands of lakes are usually dismissed as not being 'historically important'. Far from being insignificant, these nautical sites represent the local booming boat-building industry that in a real way supported Minnesota's economy and provided craftsmen with a livelihood. MHM's series of underwater archaeological projects in the suburban lakes has proven the wide-spread use of these watercraft by Minnesotans for over 150 years. Further, beyond the simple use of these boats constructed in the thousands over the last century and a half, the different wrecks MHM has identified during underwater archaeological projects - so far - exhibit nautical construction variations that can indicate preferences of the boatwrights who built these watercraft. Often small boats were fabricated without formal plans; they were designed and built using the apprentice system, often passed down through the generations in families. The Wooden Double-Ended Duck Boat Wreck - along with Charles Ichabod Clark's *Constitution/Old Ironsides* - are the most significant post-contact planked boats that exist in our State. MHM will return to the site to record further data to improve the 3D model created using photogrammetry. The identification and documentation of these Minnesota Underwater Archaeological sites matter because nearly all of these historical watercraft survive as nautical archaeological sites. The evaluation of our State's surviving small boats, like Clark's singular pre-Civil War watercraft, often assists MHM explain underwater sites and reinforces the link between the historical and archaeological record - our shared Maritime History matters.

Like 21-SC-136, the Fiberglass Folding Jonboat Wreck is in it's own class in Minnesota's sunken watercraft record. While MHM cannot determine at this time whether the wreck can be classified as an archaeological site, she is fortunately protected as a nautical cultural resource. Many questions remain unanswered about this wreck, including her manufacture, construction date, possible registration information, and her sinking date among others. Anomaly 82 is also a great candidate for photogrammetry because of the good visibility; site preparation will be needed to produce usable data, and that process falls within the restrictions of a Phase I Minnesota Archaeological License.

As a whole, the SWMLUA Project produced interesting and significant results investigating 24 anomalies in 4 lakes in 3 counties using SCUBA. MHM dove upon and identified 11 wrecks, 2 maritime sites, and 4 'other' objects in Prior Lake, Crystal Lake, Lake Minnewashta, and Lotus Lake. Of the 11 wrecks, MHM acquired Minnesota Archaeological Site Numbers for 7 of them: 3 in Lotus Lake, 1 in Prior Lake, and 3 in Crystal Lake. The documentation of these sites and similar wrecks in the future will provide historians and scholars with opportunities to further study, explain, and analyze these protected submerged cultural resources. The wrecking processes responsible for the creation of Minnesota's submerged cultural resources have produced a variety of underwater sites. Identifying, comparing, and associating these new sites in Prior Lake, Lake Minnewashta, Lotus Lake, and Crystal Lake, along with known sites increases our understanding of the historical context within which these cultural resources operated or were exploited by Minnesotans. Future studies will greatly enhance our shared maritime history through the recognition of submerged cultural resources and the stories behind their construction and disposition. The diversity of nautical, maritime, and underwater



sites so far identified by MHM in Minnesota's lakes are tangible examples of the rich maritime history of the area.

MHM continues to re-examine recorded sonar footage from completed remote sensing surveys. Targeted re-scanning has occurred in several lakes using knowledge gained from the comparison of anomalies that have proven to be wrecks or other submerged cultural resources in past projects. With improved technology, future scanning projects will produce clearer data. The results of the SWMLUA Project summarized above is connected to all the work that came before and will come after its completion. At this point, watercraft located in Minnesota's suburban lakes represent approximately 1,000 years of Minnesota's maritime history and nautical archaeology. In the historic period, the known wrecks represented in these lakes span around 150 years of local maritime culture. It is clear – even through this Phase 1 pre-disturbance nautical archaeological investigation – that the types of sites that exist in Minnesota's suburban lakes documented to date are diverse, archaeologically and historically significant, and worthy of great attention. Through research, diving on wrecks and anomalies to collect pertinent data, and ensuring that the collected information is accessible by the public, MHM will continue to investigate Minnesota's submerged cultural resources into the future.

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